B Thushar

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Summary

Innovative Machine Learning Engineer with extensive 3+ years of experience in AI solutions development, specializing in real-time data analysis, algorithm optimization, and health-tech applications. Eager to leverage advanced technical skills and a strong academic foundation to drive impactful solutions in cutting-edge projects.

Professional Experience

Rootally AI

Machine learning Engineer *(Full-Time Consultant)* *May 2021 – Sep 2021* *(Intern)*
Oct 21 – Present *(Full-Time)*

- Led the development of an **AI therapist app**, integrating pose, hand, and face detection models for motion checks, speed tracking, hand sign detection, eye tracking, and activity detection using phone sensors.
- Created a library of **250+** exercise algorithms for pain management, fitness, stroke recovery, posture, gait analysis, and other health assessments.
- Collaborated with cross-functional teams to implement and update algorithms on **Android** and **iOS** platforms, while mentoring and managing interns. Employed **linear regression** techniques to extract relationships between variables, improving the accuracy of real-time tracking systems in an AI application.
- Designed a real-time sequence matching algorithm using **Dynamic Time Warping** and **RMSE** values to compare trainers' movements, providing live **similarity scores** based on user actions.
- Optimized prompts for **generative AI** models, including **GPT**-based tools, to enhance tasks such as image captioning, posture summarization, and food detection with calorie estimation, improving output accuracy from **60%** to **85%**.
- Engineered an **API** for automating exercise data generation, enabling seamless video upload and pose data extraction. Optimized the workflow to store data directly in a database, eliminating manual entry and significantly improving efficiency.
- Performed EDA on user session data using **Python (Matplotlib, Seaborn**) to identify churn patterns and enhance user engagement through early detection, reducing churn. Implemented image processing algorithms with **OpenCV** for tongue exercises and engineered a face orientation detection method based on **Euler Angles**. and geometric principles.
- Experimented with advanced **3D** body models (**SPIN, SHAPY, Expose, STRAP**) to enhance body composition analysis. Designed a robust ML pipeline using **Expose** and **SMPL-X** with **Pytorch** to estimate body fat and health scores from images.
- Set up the ML pipeline on **Firebase Cloud Functions** with **Flask API** endpoints for real-time analysis. Improved performance through parallel computation and integrated a **GPU**-accelerated **Docker** container on RunPod's serverless platform, reducing model inference time by **50%.**

Projects

PG project: Stock price prediction using machine learning algorithms. [link]. *[2022]*

- Conducted **EDA** and feature extraction for time series data. Performed advanced feature engineering by extracting 38 new features from the closing price and date features.
- Evaluated and compared multiple machine learning models, including **linear regression**, **random forest**, **XGBoost**, and **LSTM**, for time series forecasting. Enhanced prediction accuracy through advanced feature engineering, with the **LSTM** model achieving the best performance, resulting in the lowest **MAE** error of **3.27.**
- Deployed 4 distinct stock models into a web application hosted on **Streamlite Cloud**.

M Tech project: Image processing on crops using Convolutional neural network. [link]. *[2020-21]*

- Developed a CNN-based classification model using **Keras** to predict leaf disease in potato crops with **97.1%** accuracy on test data, and pushed it on mobile devices.

- Trained object detection models **YOLO**, **SSD**, and **Faster R-CNN** using **Tensorflow** to detect and classify diseased regions in plants, with **YOLO v3** achieved **70.1% mean average precision** during field testing.
- Engineered a program to measure plant disease severity using advanced color segmentation and morphological operations in **OpenCV**, achieving a **99%** reduction in inference time compared to other built models.

Machine learning and Deep learning personal projects.

- Big Mart Sales Prediction, Loan Prediction using Machine Learning Techniques in Python and R.
- **Credit Card Fraud detection** using supervised and unsupervised algorithms.
- Machine learning and **IOT** based temperature monitoring system using z-score analysis for outlier detection.
- Designed **sentiment analysis**, **document retrieval**, and **recommendation systems** by applying machine learning approaches in a **Google Colab** environment.
- Built hands-on projects in artificial intelligence like face and emotion recognition, smart attendance system, diabetic prediction, road sign detection, object tracking, drowsiness detection, fake news detection, OCR, chatbot using nlp, speech and emotion recognition etc.

Achievements

- **Secured AIR 59 in GATE 2019**.
- Played a key role in securing a **S$400,000** grant for **Rootally AI** by winning Healthcare Innomatch 2021, enabling solution test bedding with Singapore General Hospital in collaboration with Temasek Foundation.

Education

Master of Technology
Indian Institute of Technology Kharagpur
2019 - 2021 *8.9 CGPA* *kharagpur*

PG Diploma in AI and ML
University of Hyderabad
2021 - 2022 *8.8 CGPA* *hyderabad*

B Tech
UAS GKVK
2015 - 20 *8.23 CGPA* *Bangalore*

Skills

- **Coursework:** Machine Learning, Data Science, EDA, Data Structures and Algorithms, OOPS Concepts, Deep Learning, Data Visualization, NLP, Image Processing.
- **Languages:** Python, Kotlin, R,SQL.
- **Developer Tools:** VS Code, Jupyter, Google Colab, Anaconda, Py charm, Android Studio, Firebase cloud functions, Xcode.
- **Technologies/Frameworks:** Pandas, Numpy, Tensorflow, Keras, OpenCV, Sklearn, Seaborn, Matplotlib, Git, GitHub, Tableau, Streamlit, Flask, Docker, HuggingFace.
- **Other activities**: Hackathon participant [Link] [Link], data science blogger [Link], hacker rank coder [Link].

Training and certifications

- IOT and Machine Learning. [link] *Bolt*
- Machine Learning Foundations: A Case Study Approach. [link] *Coursera*
- Convolutional Neural Networks. [link] *Coursera*
- Machine learning and Deep learning in Python and R. [link] *Udemy*
- Statistics in Data science. [link] *Great Learning*
- Artificial intelligence in Python. [link] *Pantech Solutions*
- Python for Data Science. [link] Univ Ai

Position of Responsibilities

- Successfully supervised and mentored interns by providing guidance, instruction, and support throughout their internship tenure. ***(Rootally AI).***
- Engaged directly with clients to understand their needs, challenges, and requirements related to the project ***(Rootally AI).***
- Participated in regular online client meetings for requirement gathering, issue resolution, and discussion on testing reviews, ensuring clear project progress updates and alignment.
- Visited corporate health risk assessment camps to gain insights into user-product relationships and identify challenges faced by users. ***(Rootally AI).***
- NSS volunteered during the B Tech program and attended NSS camp for 8 days*(2017)*.